# Economic Crisis, Democratization, and Welfare State Generosity in South Korea, 1972-2005: Evidence from Structural Break Estimation

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In this article, I examine the effects of economic crisis and democratization on welfare state generosity in South Korea. While there are many qualitative studies documenting welfare policy expansion after the 1997 Asian financial crisis or the 1987 democratization, statistically solid empirical research remains lacking. This study fills the gap by employing several time-series methods for testing for structural breaks. Using 1972-2005 data, I show that the two economic crises, one in 1979 and the other in 1997, play major roles in explaining the growth of the Korean welfare state. This result is consistent with the hypothesis that economic crisis leads the public to ask the government for protection. I also show that democratization led to an increase in the expenditure on welfare programs, but its effect is statistically not robust.

**Key words:** welfare policy, economic crisis, democracy, democratization, structural breaks

## I. Introduction

During the past twenty years, social scientists have attempted to determine why certain countries expand welfare policies while others do less in this regard. Alesina and colleagues have appropriately categorized the existing literature on this issue into three groups - economic, political, and behavioral explanations (Alesina, Glaeser, & Sacerdote, 2001). Using this categorization, the existing theories on the determinants of the size of welfare state include: economic factors, such as the pre-tax income

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inequality, the labor market structure, and the social costs of taxation; political factors, such as the electoral system, the form of government, and the federal structure; and behavioral/attitudinal explanations, focusing on, for example, racial prejudice and beliefs about fairness and the poor.[1] These theories have enriched our understanding of the mechanisms underlying the growth of social welfare expenditure around the world.

However, one important problem is that these theories are built based on the experiences of advanced Western democracies. In contrast, explanations for welfare state expansion in newly industrialized democracies such as South Korea are currently lacking. For this reason, it is quite dangerous to assume that the mechanisms outlined in these existing theories will apply to South Korea.
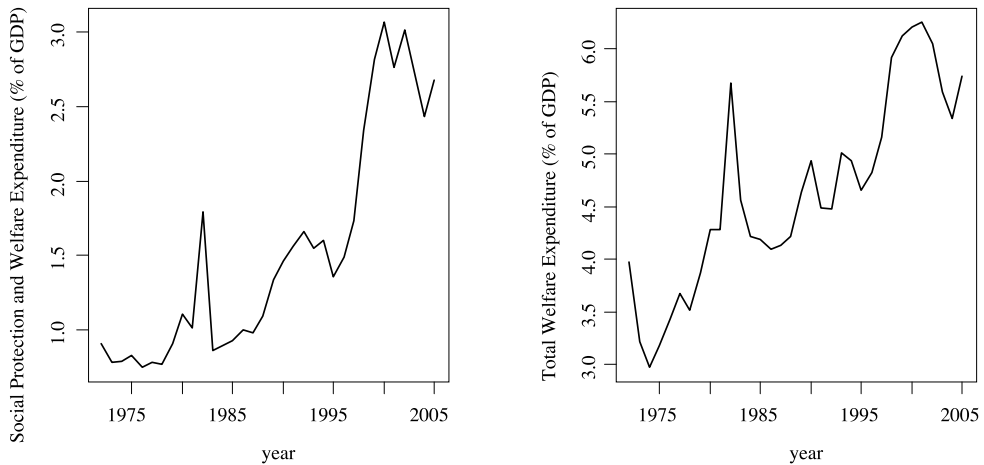
In this paper, I ask whether and how economic crisis and democratization have contributed to the growth of the welfare system in South Korea. While there are many qualitative studies documenting the expansion of social policy after the 1997 Asian financial crisis or democratization, statistically solid empirical research thus far remains marginalized. Using several time-series methods for structural breaks in data for the period from 1972-2005, I find that the 1997 economic crisis boosted welfare expenditures by 0.8-1.3 percentage points of GDP. This is consistent with previous qualitative observations that the 1997 financial crisis markedly increased the level of the Korean welfare generosity. Moreover, the 1979 oil shock led to a 0.3-1.1 percentage point increase in welfare expenditure. This suggests that government response to economically challenging times is a major driving force for expansion of the Korean welfare system. Finally, the 1987 democratization seemed to increase welfare state spending by approximately 0.2-0.4 percentage points, but this effect was not robust. This paper discusses the implications of these empirical findings with regard to the politics surrounding the Korean welfare state, which is currently at the center of a swirling political controversy.

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1. The abundant literature includes studies by: Alesina and Angeletos (2005), Alesina and Glaeser (2006), Alesina et al. (2001), Bradley, Huber, Moller, Nielsen, & Stephens (2003), Iversen and Cusack (2000), Iversen and Soskice (2006), Lindert (1994; 1996; 2004), Luttmer (2001), Meltzer and Richard (1981), Moene and Wallerstein (2001), Persson and Tabellini (2002; 2005), and Rodrik (1998).

## II. Why Economic Crisis and Democratization Should Matter
## for the Growth of Welfare State Generosity

It is well known that Korean welfare policies have been expanded. Since the introduction of work compensation insurance in 1953, Korea has subsequently legislated health insurance, old-age pensions, and unemployment and retirement benefits (Park, 2007; Pierson, 2005). Figure 1 presents simple line plots of the level of welfare spending as a percent of GDP for the period from 1972-2005. The left panel displays government expenditure on social protection measures, such as sickness and disability programs, old age assistance, and unemployment benefits. The level of total welfare expenditure additionally includes government education and health spending and is shown in the right panel. As one can see, it is obvious that the level of welfare provision has increased.[2] However, far less certainty exists about the explanations for the increase.

**Figure 1. Welfare State Generosity in South Korea, 1972-2005**



Source: International Monetary Fund, Government Finance Statistics.

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2. I should be clear that I do not mean to argue that the Korean welfare system has been expanded enough to be expected to move towards a European-style redistributive welfare state. Although the level of South Korean welfare provision has increased over time, it is still lagging behind other OECD members in all respects (Kwon & Holliday, 2007; Park, 2009; Woo, 2011). Without considering Sweden or other similar European welfare states, South Korea's welfare expenditure is below that of many other new OECD members, for example, Hungary (15 percent of the GDP for social protection and 20 percent for total welfare expenditure) and Israel (11 percent and 23 percent of GDP for social protection and total welfare expenditure, respectively).

Theories in the social sciences provide various arguments as to why different welfare policies are implemented. Among these, the present paper focuses on the economic crisis and democratization.

## A. Economic Crisis, Globalization, and Welfare Policies

Previous research on the relationship between the 1997 Asian financial crisis and the Korean welfare system employs theories that consider openness to the international market (e.g., Kwon & Holliday, 2007; Shin, 2000). The reasons for this are simple: The externally initiated crisis affected the Korean economy severely and the government tried to cope with the crisis by deepening its commitment to globalization.

There are two conflicting views regarding the effects of globalization on welfare policies. On one hand, a group of scholars argue that openness decreases the level of welfare generosity. Capital can easily move to a country that provides tax incentives and low-wage labor in the era of globalization. Even if sources of capital do not actually move out of the country, they can simply "threaten" to leave in order to gain tax and social policy concessions from the government (Alderson & Nielsen, 2002; Garrett & Mitchell, 2001; Rodrik, 1997). Economic crisis may render the threat of capital mobility even more effective and thus may be associated with less redistributive policies. When viewed through this lens, any attempt to expand welfare policies engineered in response to the 1997 crisis can be considered as paradoxical (Shin, 2000). Some social policy commitments by the South Korean government were opposite from the reaction that would normally be expected from this perspective.

A rival camp argues that openness to the global market may increase the risk from unexpected external shocks, which makes people demand welfare programs as shelter (Adsera & Boix, 2002; Avelino, Brown, & Hunter, 2005; Kaufman & Segura-Ubiergo, 2001; Rodrik, 1998). This argument does not assume that those who have failed to profit from globalization are the only ones asking for compensation via welfare programs. Rather, anyone in a globalized economy may worry about the risk of economic failure (in other words, the "that could be me" mentality). The "potential" risk associated with the vicissitudes of global markets becomes a "realized" risk during times of economic crisis. Therefore, the logic behind the positive relationship between crisis and welfare is more compelling.

The former theory is not sufficiently supported by empirical evidence according to Schulze and Ursprung (1999), who surveyed the literature on the globalization-welfare nexus. Garrett and Mitchell (2001) employed econometric analysis using time-series cross-section data for advanced Western democracies and found that openness lowered security benefits. However, a number of studies maintained that the results were in fact

products of econometric misspecification (Kittel & Winner, 2005; Plümper, Troeger, & Manow, 2005). In contrast, the "that-could-be-me" hypothesis has been supported by numerous studies (Adsera & Boix, 2002; Bretschger & Hettich, 2002; Kaufman & Segura-Ubiergo, 2001; Rodrik, 1998). In addition, a few studies have reported that globalization does not influence welfare policies (Dreher, 2006; Dreher, Sturm, & Ursprung, 2008).

There are a number of qualitative studies that document the changes in Korean welfare policies after the 1997 Asian financial crisis. These studies generally agree that the level of welfare increased after the crisis but diverge on whether the welfare programs were expanded distinctively from those that had been instituted in the past. Shin (2000) and H. Kwon (2003), for example, argue that post-crisis welfare is markedly different. However, S. Kwon and Holliday (2007) argue that the expansion was transient and restricted to the time period immediately after the crisis. The authors write that since then, the extent of the reform has been "exaggerated by observers and analysts."

## B. Democracy and Welfare

Researchers have examined the influence that democracy has on welfare spending (e.g., Adsera & Boix 2002; Kaufman & Segura-Ubiergo, 2001; Mulligan, Gil, & Sala-i-Martin, 2004). Two related theories are behind this task. First, democracy is a polity of the poor produced by historical class struggle (Korpi, 1989). A group of scholars that focuses on the history of Western Europe considers democratization as the power shift from the rich to the poor. According to Acemoglu and Robinson (2000; 2001), European democracy was in fact a response of the rich to the threat of the poor, for they did not want to lose everything after a revolution. Giving up some properties and rights to the poor was certainly better than losing everything. These rights included a decent living for every citizen, which requires social protection for the poor.

A second school of thought emphasizes the role of voting mechanisms. Democratization comes with the extension of franchise that usually pulls down the income of the median voter. Because policies are determined by the decisive voter (at least theoretically), a reduction in the median voter income increases the likelihood that redistributive policies will be implemented into law (Lindert, 2004; Meltzer & Richard, 1981).[3]

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3. The franchise extension does not necessarily mean universal suffrage. Many military dictatorships institutionalize universal suffrage, but the election results are mostly determined by fraudulent elections, and policies are determined by dictators and their coalition members. Therefore, the franchise extension can be understood as a transition to a regime under which public decisions are made by voting (Mulligan et al., 2004).

Contrary to the two theories above, some formal theorists view the democratic voting mechanism as unimportant in policy decisions (Weingast & Marshall, 1988; Wittman, 1989). Conflicts over policy must be mediated, but the umpire does not have to be a democratically elected leader. In this view, democratic regimes do not necessarily choose policies that are more favorable to the poor than do non-democratic regimes.

The empirical support is mixed. A number of studies find that democracies spend more on welfare programs than non-democracies (Avelino et al., 2005; Kaufman & Segura-Ubiergo, 2001; Rudra & Haggard, 2005). Other researchers have found that there is no significant difference between the regimes (Lindert, 1994; Mulligan et al., 2004; 2010).
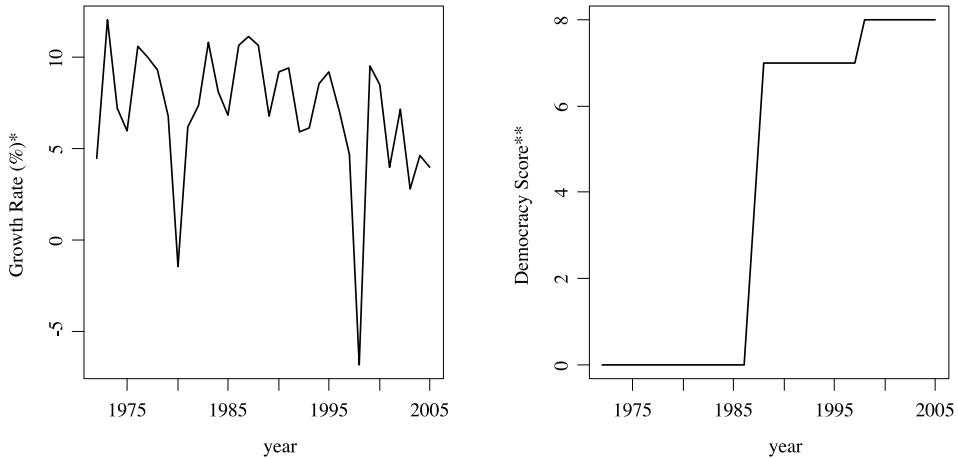
The theories above are developed based on the experiences of Western welfare states and thus may not necessarily be applicable to the case of South Korea. Korean democratization is not a product of a class struggle or a transition to the polity of the poor. The theory focusing on a shift in the median voter's economic position makes sense, but the question as to whether the movement is significant enough to induce noticeable expansion of the welfare state in Korea remains to be proven empirically. Previous research treats democratization as an important factor in explaining the development of the Korean welfare state (e.g., Kwon, 1998; Park, 2007; Shin, 2000). However, no statistical evidence has been provided thus far.

Existing studies have considered economic crisis and democratization as determinants of Korean welfare development. However, these studies have been exclusively qualitative. To the best of my knowledge, this paper is the first quantitative analysis that attempts to measure the impact of economic crisis and democratization on welfare state generosity in South Korea. It will contribute to the field of Korean welfare policy by statistically testing the hypotheses that previous qualitative studies have claimed.

## III. Methods and Data

To test for the impacts of economic crisis and democratization, this paper employs several time-series methods for estimating structural breaks using yearly welfare expenditure data collected during the period from 1972-2005. Structural break estimation is a technique that is widely used to capture systematic change before and after a salient event. This method is particularly promising in the Korean context because there were three politically and/or economically conspicuous shocks during the period from 1972-2005. The left panel of Figure 2 presents growth rates for each year. As one can see, there are two economic nadirs, one in 1979 due to the second oil shock and the other in 1997 due to the Asian financial crisis. The democracy score, as determined

**Figure 2. Conspicuous Events in the History of the Korean Political Economy**



Source: * World Bank, World Development Indicators.
　　　　** Marshall et al. (2011). Polity IV Project.

from the Polity IV database, is plotted against year in the right panel. This score increases markedly during the 1987 democratization.

The Chow test is a classical tool used to test for structural breaks (Chow, 1960). The procedure splits the sample into two sub-periods, estimates the parameters of a specified model for each sub-period, and then tests the equality of the two sets of parameters. While this test has been used as the workhorse in the social sciences, it has a critical flaw. To use this tool, a researcher must choose a breakdate. The problem is that the test statistic can indicate a false-positive break even if nothing in fact structurally changes. This can be a serious problem because different researchers may obtain different results based on arbitrarily chosen breakdates.

The limitation basically lies in the fact that the true breakpoints must be known a priori. However, there is always the possibility that ex-ante knowledge is not true. To solve this problem, it is necessary to assume that the true breakdate is unknown. Then, how can one test for structural breaks of unknown timing?

One idea involves using F-statistics from the Chow test at every candidate break-point (Quandt, 1960). Quandt argues that the largest F-statistic yields the worst break and so is informative when testing whether there is a breakdate in the series. The critical value for this test is provided by Andrews (1993). Furthermore, Andrews (1993) and Andrews and Ploberger (1994) suggest that the average and exponential average of all F-statistics improve the power of the test. These three test statistics, namely, *supF*, *aveF*, and *expF*, will be used in this paper to see whether there is at least one break-

point in the series of Korean welfare expenditures. Hansen (1997) provides a method to calculate p-values for these test statistics; this method is employed here as well.

After it is established that there is at least one breakpoint, this study then considers multiple breakpoints because the two economic crises and single democratization are the points of interest. Using a dynamic programming algorithm provided by Bai and Perron (1998; 2003), I estimate the number of breaks, and, more importantly, the breakdates in the series as well. The idea behind Bai-Perron's dynamic programming (BP algorithm) is to find the worst breakpoint, split the sample, find the worst break-point in each sub-period, and repeat this procedure until no breakpoint is found. This method is particularly useful when checking whether the ex-ante candidates are true breakpoints.

After the breakpoints have been estimated, I run the multivariate dummy variable time-series regression. The model is as follows:

$$y_t = \alpha + D'_t \gamma + X'_t \beta + \delta T_t + \varepsilon_t, \tag{1}$$

where $y_t$ is the welfare expenditure as a percent of GDP; $D_t$ is a vector of dummies that equal 1 for the post-event years and 0 otherwise; $X_t$ is a vector of control variables; and $T_t$ is a time trend. The coefficient vector $\gamma$ measures the degree to which the expenditure on welfare programs jumps systematically at the breakpoints.

As the dependent variable, I used consolidated central government expenditure on social protection and welfare obtained from the International Monetary Fund's Government Finance Statistics (IMF's GFS). I then divided this value by the current price GDP from the IMF's International Financial Statistics and multiplied it by 100. The government expenditures on social protection and welfare include cash and in-kind services as well as transfers in the categories of sickness and disability, old age, family and children, unemployment, housing, and low-income earners. As another measure of the level of welfare generosity, I computed "total welfare" expenditure from the sum of consolidated central government expenditures on education, health, and social protection and welfare. Note that it is important to use consolidated expenditure data as it eliminates all intergovernmental transactions and creditor-debtor relationships. $X_t$ includes variables that may influence welfare state generosity. Specifically, GDP per capita is measured as the natural log of real GDP per capita in PPP-adjusted constant dollars (chain index). These data were obtained from the Penn World Table 7.0. Trade openness is measured by the sum of total exports and imports as a percent of GDP. The demographic composition of the population is captured by two variables: population aged from 15 to 64 (economic activity population) as a percent of total population and population aged 65 and older (elderly population) as a percent of total population.[4]

**Table 1. Summary Statistics**

| Variable | N | Mean | SD | Min | Max |
|---|---|---|---|---|---|
| Social Protection as a % of GDP | 34 | 1.52 | 0.75 | 0.75 | 3.07 |
| Total Welfare as a % of GDP | 34 | 4.64 | 0.92 | 2.97 | 6.25 |
| Real per Capita GDP | 34 | 11234.9 | 6280.8 | 3297.0 | 22808.1 |
| Population aged 15-64 (% of total) | 34 | 66.52 | 5.27 | 55.9 | 71.7 |
| Population aged 65 and above (% of total) | 34 | 5.29 | 1.74 | 3.35 | 9.28 |
| Output Gap | 34 | -0.09 | 2.23 | -7.03 | 3.94 |
| Trade (% of GDP) | 34 | 64.31 | 7.79 | 43.58 | 79.46 |
| Net Liability as a % of GDP | 34 | 0.85 | 1.89 | -3.59 | 3.97 |

"Output gap" is measured by the deviation of aggregate output from its trend value in percent.[5] Government net liability is calculated as a percent of GDP based on data obtained from the IMF's GFS. The summary statistics are presented in Table 1.

## IV. Findings

Table 2 reports the Chow test results for the social protection and total welfare data at 1979 (oil shock), 1987 (democratization), and 1997 (Asian financial crisis) in the first, second, and third columns, respectively. All tests reject the null hypothesis that there is no systematic break. As mentioned above, however, the Chow test frequently reports false-positive results.

I then used the Quandt-Andrews test with the assumption that the breakpoint was

**Table 2. Chow Test Results for Structural Breaks at Specified Breakpoints**

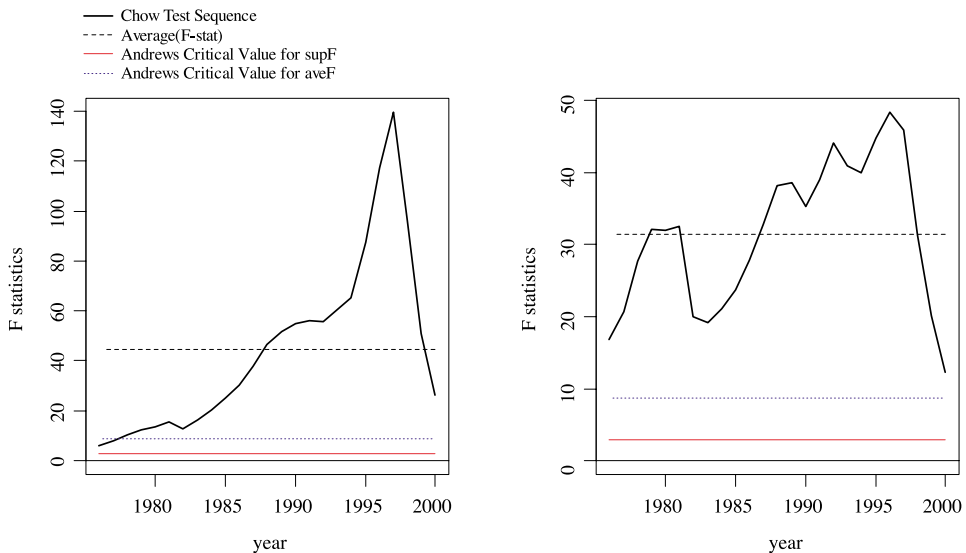| | Oil-Shock | Democratization | Crisis |
|---|---|---|---|
| Social Protection | 12.4426*** | 37.9776*** | 139.6659*** |
| Total Welfare | 32.1522*** | 32.8602*** | 45.8928*** |

*** p<0.01

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4. Trade and population data were extracted from the World Development Indicators.
5. The Hodrick-Prescott filter was used to obtain the trend of the natural log of real GDP and then computed the difference between the log (GDP) and its trend (Hodrick & Prescott, 1997).

**Table 3. Quandt-Andrews Tests for Structural Breaks of Unknown Timing**

|                    | supF            | aveF          | expF          |
| ------------------ | --------------- | ------------- | ------------- |
| Social Protection  | 139.6659\*\*\*  | 44.683\*\*\*  | 66.6141\*\*\* |
| Total Welfare      | 48.3933\*\*\*   | 31.4266\*\*\* | 21.4716\*\*\* |

\*\*\* p<0.01. P-values are calculated according to Hansen (1997).

unknown. In Table 3, I report the *supF*, *aveF*, and *expF* test statistics, which all indicate
that there is at least one significant break for both social protection and total welfare
data. The construction of the above statistics is graphically displayed in Figure 3
(Quandt, 1960; Andrews, 1993). It plots the F-statistics from the Chow tests against all
candidate breakpoints. The left panel is the Chow test sequence for the social protec-
tion (as a percent of GDP) series. The maximum F-statistic is found at 1997; this value
is surely larger than the Andrews' 95% critical value for *supF*. The dashed line repre-
sents the average of the Chow test sequence, which is also larger than the critical value
displayed as the dotted line. Therefore, one can reject the null hypothesis that there is
no break in the series of social protection data. The Chow test sequence for the total
welfare expenditure is reported in the right panel. Here, too, the maximum F-statistic
is found at 1997. This value is well above the Andrew's 95% critical value for *supF*.

**Figure 3. Testing for Structural Change of Unknown Timing: Chow Test Sequence as a
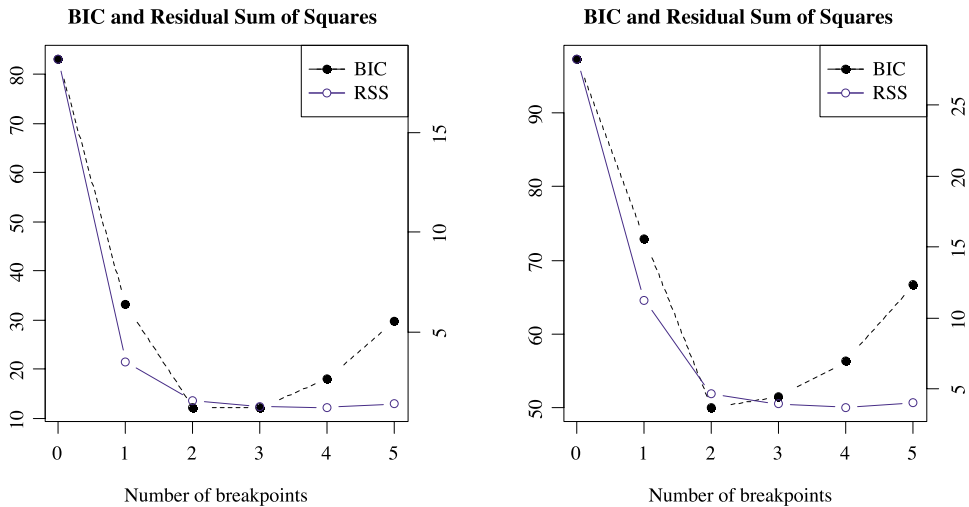         Function of Potential Breakpoints**



Note: The left and right panels depict social protection and total welfare expenditure data, respectively.

The average of the Chow test sequence is also larger than the critical value, so the null hypothesis of no break is rejected.

Because the Quandt-Andrews test results confirm that there is at least one structural break in both social protection and total welfare expenditure data, I estimate the number of breakpoints and the breakpoints themselves using the BP algorithm (Bai & Perron, 1998; 2003). As mentioned in the previous section, the algorithm provides the sequential procedure to estimate the breakpoints for each sub-period. I first ran the regression of welfare on a constant, found the worst breakdate of the entire series, and stored the residual sum of squares (RSS) and the value of Bayesian Information Criterion (BIC).[6] For each sub-period, I repeated the procedure until no significant break was found. Figure 4 presents the BIC and RSS as a function of the number of breakpoints. The left panel shows the social protection data, while the BIC and RSS for the total welfare data are displayed in the right panel.
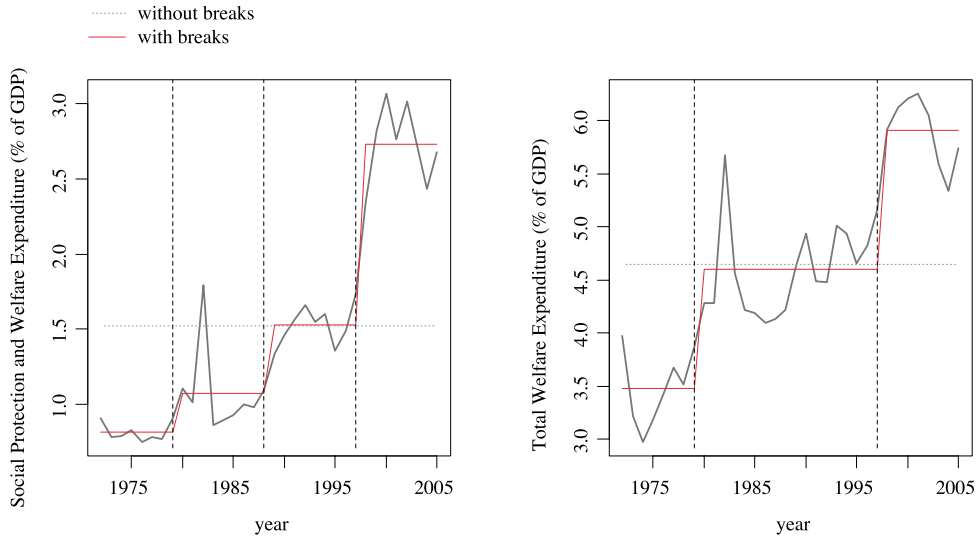
As one can see, the RSS values are minimal after N equals approximately 2 or 3.

**Figure 4. Breakdate Estimation: Bayesian Information Criteria and Residual Sum of Squares as a Function of the Number of Breakpoints**



Note: The left and right panels depict the social protection and total welfare expenditure data, respectively.

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6. Note that I chose BIC as the model selection criterion, as Yao (1998) suggested. Briefly speaking, BIC penalizes for overfitting; adding parameters (in this example, candidate breakpoints) almost always increases the goodness of fit, but an overfitted model generally does not represent the true data-generating process as it can amplify tiny fluctuations in the data.

**Figure 5. Mean Values with and without Estimated Breakpoints**



For the social protection data, the minimum BIC is found at N = 2 or 3. The breakpoints for N = 2 are found to be 1988 and 1997, while those for N = 3 are 1979, 1988, and 1997. These estimated breakpoints are almost the same as our ex-ante breakpoints of the second oil shock, democratization, and the Asian financial crisis. For the total welfare data, BIC suggests choosing N = 2; the corresponding breakdates are 1979 and 1997, the two economic crises included in the sample period. Figure 5 plots the original yearly series for social protection (left panel) and total welfare (right panel) expenditures along with their mean values with and without the estimated breakpoints. The plots clearly show that the estimated breakpoints explain the structural changes in the size of the welfare state in South Korea.

With the estimated breakpoints, I ran a time-series regression of model (1). For the social protection data, the dummy vector $D'_t = [d_{1t} \ d_{2t} \ d_{3t}]$ includes a dummy that equals 1 for the years after the oil shock (post-1979) and 0 otherwise, a dummy that scores 1 for the post-democratization years (post-1988) and 0 otherwise, and a dummy for the post-financial crisis years (post-1997). Note that the breakpoint of 1988 is slightly different from the ex-ante knowledge of 1987. This may indicate that there are some lags between democratization and enacted welfare policy. This is logical because democracy typically follows a transition period. For the total welfare expenditure data, the dummy vector $D'_t = [d_{1t} \ d_{3t}]$ includes the same dummies listed above, except for the one for the post-democratization years.

Table 4 reports the estimated $\hat{\gamma}$ along with the standard error. The first three

**Table 4. Regression Results**

| VARIABLES | Social Protection | Social Protection | Social Protection | Total Welfare | Total Welfare | Total Welfare | Total Welfare | Total Welfare |
|---|---|---|---|---|---|---|---|---|
| Post-Oil Shock | 0.252***<br>[0.0357] | 0.294***<br>[0.0785] | 0.287***<br>[0.0767] | 1.104***<br>[0.0941] | 0.716***<br>[0.195] | 0.532***<br>[0.169] | 0.631***<br>[0.123] | 0.521***<br>[0.173] |
| Post-Democratization | 0.403***<br>[0.0502] | 0.207**<br>[0.0953] | 0.371<br>[0.273] | | | | | |
| Post-Crisis | 1.160***<br>[0.0864] | 0.905***<br>[0.314] | 0.780***<br>[0.170] | 1.293***<br>[0.0988] | 1.223***<br>[0.439] | 0.772***<br>[0.268] | 0.945***<br>[0.298] | 0.712***<br>[0.229] |
| Observations | 34 | 34 | 34 | 34 | 34 | 33 | 34 | 33 |
| R-squared | 0.881 | 0.905 | 0.907 | 0.820 | 0.872 | 0.900 | 0.883 | 0.902 |
| Covariates | . | X | X | . | X | X | X | X |
| Trend | . | . | X | . | . | . | X | X |
| LDV | . | . | . | . | . | X | . | X |
| Durbin-Watson | 1.661 | 1.625 | 1.621 | 1.516 | 1.462 | 2.104 | 1.453 | 2.028 |
| Breusch-Godfrey | 0.941 | 1.680 | 1.679 | 1.521 | 3.693 | 0.257 | 3.414 | 0.0304 |
| p-value (BG) | 0.332 | 0.195 | 0.195 | 0.217 | 0.0546 | 0.612 | 0.0646 | 0.862 |
| Long-term: Post-Oil Shock SE[Equil-Oil] | | | | | | 0.886***<br>[0.213] | | 0.812***<br>[0.177] |
| Long-term: Post-Crisis SE[Equil-Crisis] | | | | | | 1.284***<br>[0.405] | | 1.110***<br>[0.328] |

Newey-West standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

columns present the estimated coefficients obtained from regressing the social protection expenditure, while the coefficients estimated from the regressions of the total welfare expenditure are displayed in the last five columns. I report the unadjusted coefficient estimates, i.e., estimates from the regressions without any control variable in the first and fourth columns. These estimates measure the degree to which each dependent variable jumps at the breakpoints without adjusting for any other effect that may exist and thus correspond to the jumps in Figure 5. The second and fifth columns report the adjusted estimates after partialing out the effects of the covariates. The coefficients are estimated after controlling for the covariates as well as trend in the third and seventh columns.

I used the Newey-West estimator which is robust to heteroskedasticity and autocorrelation of the errors because the disturbance from a regression is unlikely to be of the Gauss-Markov type in time-series data (Newey & West, 1987; 1994). I also employed two tests for serial correlation in the disturbance — the Durbin-Watson d-statistics (DW) and the Breusch-Godfrey (BG) test (Breusch, 1978; Davidson & MacKinnon, 1993; Durbin & Watson, 1950; 1951; 1971; Godfrey, 1978). The tests fail to reject the null hypothesis of no serial correlation at the 90% level in most specifications; this, however, does not hold for the fifth and seventh columns. If serial correlation is considered as a nuisance that leads to the violation of Gauss-Markov assumptions, it is necessary to use heteroskedasticity and autocorrelation-consistent standard errors.[7] This is done by using the Newey-West estimator. In contrast, the London School of Economics and Political Science approach involves treating time-series data in the context of social dynamics. Serial correlation is a sign of misspecification from this perspective, so it is necessary to re-specify the model by adding lagged variables. I added a lagged dependent variable to the model whenever the DW or BG test rejected the null hypothesis of no serial correlation. The sixth and eighth columns present the estimates obtained from the regression after the inclusion of lagged dependent variables in addition to the specifications reported in the fifth and seventh columns. DW and BG tests fail to reject the null of no serial correlation in the lagged dependent variable models.

The regression results in Table 4 show clearly that economic crises have induced the growth of welfare spending. The level of social protection jumps at the 1997 Asian financial crisis by 0.8-1.2 percentage points of GDP, depending on the specification. This estimate is substantially large given that the expenditures on social protection

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7. Or, Generalized Least Squares (GLS) can be employed to obtain efficiency. However, modern econometricians prefer not to use GLS. For the most intuitive reasons why GLS is not an ideal estimator, see Angrist and Pischke (2008).

reached 2.7 percent of GDP in 2005. The 1997 crisis also increased total welfare spending by 0.9-1.3 percentage points.[8] The expansion of welfare system at the wake of the 1997 financial crisis has been documented in many previous qualitative studies as well as in newspapers. It was paradoxical for those who viewed globalization as (the threat of) capital mobility (e.g., Shin, 2000). However, it is just as expected from the perspective of the "that-could-be-me" hypothesis.

Due to the severity of the 1997 crisis, the Kim Dae-jung government could not avoid the IMF conditionalities for the recovery. The IMF policy packages were harsh in that they demanded massive lay-offs, early retirements, and company shut-downs.[9] When the public needed social safety nets, employers started to reduce welfare benefits to employees and their families due to tight budgets. Labor unions fought to tone down the neo-liberal policy packages which were likely to lead them to be unemployed sooner or later. Employers, too, were anxious because they could also be one of the unemployed if their firms shut down.

In this situation, the government expanded social safety nets to protect the (potential) victims. In 1998, the coverage of unemployment insurance was expanded to all companies with more than one employee. It was gradually extended to cover part-time government workers (2000) and finally all temporary workers (2002). The duration of unemployment compensation was also extended from 60 to 210 days. In 2000, Industrial Accident Compensation Insurance was expanded to cover all companies with one or more employees (except for the agricultural, forestry, and fishery industries, in which companies with five or more employees were covered). As a result, the number of companies participating in the program increased from 249,405 to 706,231 (Korea Workers' Compensation and Welfare Service Labor Insurance Research Institute, 2000). The public assistance scheme for the poor was also expanded. To cope with public insecurities immediately after the crisis, the government introduced temporary social assistance programs that included unemployment compensation, assistance for the homeless, and preferential loans to the poor. By early 1999, approximately

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8. For the lagged dependent variable models, I added the long-term equilibrium effects of the events at the bottom of the sixth and eighth columns. These values are obtained by assuming the steady state so that the regression model $y_t = \phi y_{t-1} + \gamma_1 d_{1t} + \gamma_1 d_{3t} + \ldots$ is taken to be

$$y_t = \frac{\gamma_1}{1-\phi} d_{1t} + \frac{\gamma_1}{1-\phi} d_{3t} + \cdots \equiv \varphi_1 d_{1t} + \varphi_3 d_{3t} + \cdots.$$ The standard errors of the long-run parameter estimates $\widehat{\varphi}_1$ and $\widehat{\varphi}_3$ are obtained using the delta method.

9. The government also implemented a series of state-led neo-liberal reforms in order to attract foreign capitals. The labor market became more flexible than ever before. The government also amended bankruptcy laws so that it could quickly allow inefficient firms to exit (Lim & Hahn, 2004).

760,000 people were qualified for this temporary assistance because the means-tested conditions were relaxed by raising the maximum asset requirement from 29 million to 44 million won. As a result, the number of people who benefitted from the public assistance program increased from 2.6 percent in 1997 to 4.2 percent of total population in 1999 (Shin, 2000). The government institutionalized the means-tested public assistance scheme so that people living with a monthly income below the poverty line were entitled to government aids (Minimum Living Standard Guarantee implemented from 2000). Finally, 1999 was a historic year in which a universal National Pension System was established for the first time in the history of South Korea. As one can see, the 1997 financial crisis brought on serious public insecurities. Everyone could potentially become a victim of the crisis and the implementation of IMF policy packages. In response to public demands, the government provided active measures of social protection. The enacted and amended welfare-related laws and programs were institutionalized so that 1997 became a turning point of the Korean welfare system (Song, 2003).

1997 was not the first year that South Korea experienced the expansion of welfare state generosity in the aftermath of economic crisis. As reported in Table 4, the 1979 crisis also significantly increased Korean welfare generosity. Social protection and total welfare expenditures increased by 0.25-0.3 percentage points (as shown in the first three columns) and 0.6-1.1 percentage points (as shown in the last five columns), respectively. The 1979 oil shock brought high inflation and unemployment (as can be expected from any economic crisis). The authoritarian governments had to worry about social turmoil. Because they did not have election-based legitimacy, they were highly likely to face militant actions in civil society once they lost economic efficiency. Although many social laws and programs were enacted during the 1960s and 1970s, they were not really implemented before 1979, as shown in Figure 5. In this situation, the authoritarian governments had to implement social protection schemes.

To cope with the difficulties, the South Korean government provided various measures to protect those who were affected and those who would potentially be affected by the crisis. The income tax rate was temporarily reduced for wage earners and small businesses. Job training programs were also introduced to help the unemployed. More importantly, the government began to actively implement already-legislated welfare programs. In the 1960s and 1970s, President Park Chung-Hee legislated many social programs, such as public assistance programs (1961), the National Pension System (1973), and Medical Aid (1977). However, most of these programs were not implemented until later.[10] It was not until 1979 that Medical Aid began to be actively imple-

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10. Several other important welfare programs were enacted in 1963. These include Industrial

mented. Those who did not have the ability to earn were qualified to receive free medical care for inpatient and outpatient services. Those who earned less than 30,000 won (in rural areas) or 40,000 won (in urban areas) per month were eligible to receive free inpatient services, and 30 percent of outpatient service fees were covered by the government. People who were qualified for these means-tested benefits accounted for approximately 5.7 percent of the total population (Nam, 2006b). Moreover, Health insurance was extended to cover public servants and private school teachers in 1979.

President Chun Doo-Hwan made a clear statement that it was the state's responsibility to promote the people's well-being (Kim, 2003). Accordingly, the government amended the Act of Welfare for Children (1981) and Basic Livelihood Protection (1982). Health Insurance was also rapidly expanded to cover companies with more than 100 employees in 1981. Arguably, the most notable enactments involved the Act of Welfare for the Elderly (1981) and Act of Welfare for the Disabled (1981). The government vigorously started the construction of welfare facilities (Nam 2006c). The peak around 1982, shown in Figure 5, may partly be explained by the constructions of numerous government-sponsored welfare centers.[11] 1982 was also the year that Industrial Accident Compensation Insurance was extended to companies with more than 10 employees. In short, the government response to the 1979 economic crisis was similar to the response observed after the 1997 crisis. The government had to deal

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Accident Compensation Insurance, Health Insurance, and the Social Security law. Industrial Accident Compensation Insurance was implemented but only for those companies with more than 500 employees in mining and manufacturing sectors. Moreover, it was financed by the contributions of employers, not the government, so it was not a government welfare per se. Health Insurance did not become mandatory, so only 11 companies participated until 1977, when it became mandatory for companies with more than 500 employees (Nam, 2006a).

11. Because the peak in 1982 (shown in Figure 5) is peculiar, I verified whether the structural break around 1979 remained robust when the peak was replaced by the mid-point between 1981 and 1983 (I thank an anonymous reviewer for pointing this out). The break was robust in several senses. First, simply replacing the peak did not change the results of the Chow and Quandt-Andrews tests and multivariate regression. Second, the BP algorithm gave slightly different breakpoints. After the replacement of the data, the estimated breakpoints were 1978, 1988, and 1997 for both social protection and total welfare data. The Chow and Quandt-Andrews tests still rejected the null hypothesis that there were no structural breaks around the newly estimated breakpoints. The structural breaks around 1978 were significant in all specifications in Table 4 although the magnitudes of coefficients decreased. Of course, the newly estimated breakpoints are the result of data manipulation, so I reported the results without the replacement of the data. Interested readers can obtain the robustness results after data manipulation upon request.

with public insecurities and demands for social safety nets. The laws, facilities, and government activities in the years between 1979 and 1982 laid the foundation for the development of Korean welfare system (Kim, 2003; Nam 2006c).

Previous research points out that democratization is also an important factor in explaining the development of the Korean welfare state (e.g., Park, 2007; Shin, 2000; Song, 2003). This is a plausible hypothesis as democratization may increase the relative power of the poor. The median voter hypothesis also makes sense as the income of the decisive voter may be pulled down after democratization. There is some historical evidence that democratization increased some level of welfare generosity. In 1988, the National Pension System began to be implemented and Health Insurance became mandatory for companies with more than five employees. Empirically, social protection spending increased by about 0.2-0.4 percentage points when the country underwent democratization (with a one-year lag) as displayed in Table 4. However, this association is not statistically robust. If covariates as well as trend are added, the estimate becomes insignificant. This less certain result is not that much different from the analysis of previous qualitative research. For example, Shin (2000) states that

> "The democratic transition after July 1987 … was a turning point for the social security system in Korea. During the periods of the Roh Tae-Woo government (1988-92) and the Kim Young-Sam government (1993-97), most types of social security programmes came into effect, with the exception of family allowances. Yet this institutionalization of the social security system did not necessarily mean the coming of the welfare state to Korea. The social security programme was not designed to embody a guaranteed social right, basing itself instead on a social insurance scheme."

## V. Conclusion and Discussion

There have been considerable scholarly efforts to clarify why welfare programs expand in some countries. This has certainly been one of the most intriguing questions in the field of political economy during the past twenty years. Most studies on the Korean welfare state have been exclusively qualitative. To fill the gap, this paper has sought to investigate the factors contributing to the expansion of the Korean welfare system using sophisticated statistical methods, focusing on the effects of economic crises and democratization.

The results in this study show that the level of welfare generosity significantly increased after the 1997 Asian financial crisis. This is consistent with qualitative research documenting welfare state development after the 1997 crisis (Kwon, 2003;

Shin, 2000). This study also finds a meaningful growth in welfare spending not only after the 1997 crisis, but also after the second oil shock in 1979. This result suggests that economic crises are a major driving force behind the expansion of the Korean welfare state. Public support for welfare increased immediately after the 1997 economic crisis (Shin & Rose, 1997; 1998).[12] This is consistent with the "that-could-be-me" hypothesis, which purports that economic crisis leads the public to ask for protection and welfare from the government and that democratic government responds to the public preferences. Interestingly, economic crisis also increased Korean welfare generosity under authoritarian regimes. There is a claim that the growth of the state welfare effort after 1997 can be attributed to democratization because the state would not necessarily respond to the public demand for social protection without electoral pressures (Song, 2003). Contrary to this argument, the results in this study suggest that, at least in South Korea, it may not necessarily be a democratic leader who responds to the demands of the public for shelter during times of economic crisis. Authoritarian leaders may have an incentive to provide welfare in order to pre-empt massive strikes and labor mobilization. The policy-making should be primarily of a top-down nature, but it is naïve to believe that the top-down social protection is provided without dictators' knowledge of public insecurities during times of economic crisis.

This paper's findings carry important implications for Korean welfare politics. The recent battleground over welfare has been more heated than in the past. The presidential candidate of the ruling conservative party, Park Geun-hye, initiated the controversy over welfare in 2010. Since then, each presidential hopeful is attempting to attract voters by presenting his/her philosophy on welfare.

It is surprising that no presidential candidate expresses a desire to limit social welfare. Every single candidate, irrespective of the ideological platform of the affiliated party, maintains that Korea needs more welfare programs. One interesting question is why conservative politicians have recently changed their long-held view that the welfare system must be limited in size. The findings presented here suggest that the key answer lies in the risks emanating from the global recession. The recent negative shock to the Korean economy has not been as serious as those experienced in 1979 and 1997; however, the fear has remained persistent. In other words, this is a context that is likely to substantiate the conditions for the "that-could-be-me" hypothesis.

It is not yet certain whether Korea will move to a new stage of welfare services as

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12. According to the two surveys conducted by Shin and Rose (1997; 1998), 49% of respondents in the May 1997 survey answered that the state, as opposed to each individual, should be responsible for everyone's economic security. This number almost doubled (83%) in October 1998.

promised by the presidential candidates. As mentioned above, South Korea is lagging behind other comparable countries in terms of welfare state generosity although it has increased over time.[13] This means that it is generally hard to expect a radical escalation of Korea's social welfare. This study suggests that the South Korean people's demand for welfare would persist or even grow if pessimism regarding the current economy persists. Politicians would have to respond to this societal demand by increasing social protection. However, it is likely that politicians, at least the conservatives, will change their stance that is in favor of maintaining the current level of welfare benefits if the Korean economy improves before one of the present welfare blueprints is institutionalized.[14]

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13. Since South Korea joined OECD in 1996, it has been lowest of all OECD members in terms of welfare expenditure except for a few years when it came in second-to-last.
14. Presidential candidates from the two major parties, the Saenuri and Democratic Parties, do not expect to increase the tax burden to fund welfare programs (Hankyoreh, 23 July 2012). They believe that they can finance welfare revenue by reducing expenditures in other policy areas, which suggests that welfare revenue can easily be cut back to be used for other policy areas if the situation changes.

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